



MDE_SIEM_0605#HC25

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Siemens Cellular Engine HC25 – predictions for Maximum Permissible Exposure

Dear Mr. Liebig,

please find our Maximum Permissible Exposure calculations for the GSM/WCDMA module HC25.

Best Regards

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Maximum Permissible Exposure

(as specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure)

<i>Frequency range (MHz)</i>	<i>Power density (mW/cm²)</i>
300 – 1,500	f/1500
1,500 – 100,000	1.0

Calculations 850 MHz band

Maximum peak output power at antenna input terminal: 32.3 dBm (1698.24 mW)
(see 7 layers test report MDE_SIEM_0605_FCCa)

Prediction distance **R**: 20 cm
Prediction frequency: 824.2 MHz

MPE limit **S**: 0.5495 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

- S = power density
- P = power input to the antenna
- G = power gain of the antenna in the direction of interest relative to an isotropic radiator
- R = distance to the centre of radiation of the antenna

Maximum permissible antenna gain: **2.1121 dBi**

Prediction

The maximum allowed MPE value of 0.5495 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 2.1121 dBi would be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below 2.1121 dBi.

Calculations 1900 MHz band

Maximum peak output power at antenna input terminal: 30.0 dBm (1000 mW)
(see 7 layers test report MDE_SIEM_0605_FCCb)

Prediction distance **R**: 20 cm
Prediction frequency: 1880 MHz

MPE limit **S**: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

Maximum permissible antenna gain: **7.0127 dBi**

Prediction

The maximum allowed MPE value of 1 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 7.0127 dBi would be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below 7.0127 dBi.